MONTANA FISH, WILDLIFE AND PARKS
FISHERIES DIVISION

ENVIRONMENTAL ASSESSMENT

TRANSFER OF WESTSLOPE CUTTHROAT TROUT FROM N. FK. WILLOW CREEK (TETON RIVER DRAINAGE) TO LANGE CREEK (SUN RIVER DRAINAGE)

I. Description of proposed action

A. Description of water body and action.

Receiving Water:

Name:	Lange Creek;	Location:	T21N R10W Sec 11
County:	Lewis and Clark County		

Donating Water:

Name:	North Fork Willow Creek	Location:	T24N R8W Sec 8, 9
County:	Teton		

Montana Fish, Wildlife & Parks (MFWP) proposes transferring non-hybridized juvenile and adult westslope cutthroat trout (WCT) *(Oncorhynchus clarkii lewisi)* to currently fishless Lange Creek (Sun River Drainage) from North Fork Willow Creek (Teton Drainage). From 150 to 300 fish will be transferred by helicopter over a two to three year period. Relative abundance information as well as the upstream extent of the WCT population in North Fork Willow Creek was collected 28 August 2008. No more than 10% of the total population of fish >= 6 inches and no more than 20% of the total population of fish < 6 inches will be moved in any one year.

North Fork Willow Creek is located in the upper Teton River Drainage 20 miles west of Choteau Montana. A short section of North Fork Willow Creek is located on private land; the remainder is on State Lands administered by MFWP. North Fork Willow Creek (1.25 miles of stream) supports a remnant population of non-hybridized WCT above a dry channel (Figure 1). Genetic tests (22 fish 1990, 10 fish 2000, 20 fish 2001, 39 fish 2006) indicate the North Fork Willow Creek WCT population is non-hybridized. In addition, a 54 fish sample was collected (29 August 2008, results pending) from a small off stream irrigation reservoir that supports an adfluvial component of the North Fork Willow Creek WCT population. The number of WCT in North Fork Willow Creek is large enough to permit transfer of enough juvenile and adult fish into Lange Creek without any subsequent impact to the genetic integrity of this population.

The entire Sun River upstream of Diversion Dam, which was built on a large barrier waterfall, was historically fishless until stocking efforts in the early 20th century. About four miles upstream from Diversion Dam is the much larger Gibson Dam, which forms Gibson Reservoir. Lange Creek, a tributary to Gibson Reservoir in the Sun River Drainage, is currently fishless because of an approximately 200-foot waterfall just upstream of its confluence with Gibson Reservoir. Lange Creek has approximately 4 miles of fishless habitable stream above the barrier. An additional 1.5 miles of habitat exists above an intermediate barrier in the headwaters of Lange Creek (Figure 2). The proposed action involves transferring wild WCT to the lower 4 miles of stream. The upper 1.5 miles of stream would remain fishless. Lange Creek was surveyed for presence of fish and habitat fragmentation in 2005. No fish were found during these surveys, however habitat was deemed suitable to sustain a fishery, with numerous overwintering pools, good channel complexity, and a thriving aquatic invertebrate community. Spawning gravels are adequate despite high levels of glacially derived silt. The average August water temperature in 2003 (collected hourly with a thermograph) was 11.78 C. Summer temperatures of this magnitude are more than adequate for fry development and overwinter survival (Harig and Fausch 2002; Coleman and Fausch 2005). In 2007, several major wildfires burned in the area of Lange Creek. Approximately half of the Lange Creek watershed burned with low intensity, and less than 20% burned at a moderate to severe intensity. The size of the drainage coupled with the predominantly low intensity of the burns will likely not affect the success of a fish transfer to Lange Creek. We predict that the 4 mile reach proposed for the transfer will support more than the 2,500 minimum WCT population size recommended by Hilderbrand and Kershner (2000) for long term persistence (>100 years). Additionally, the Lange Creek drainage encompasses 6.54 square miles, which is greater than the 5.6 square mile minimum watershed size recommended as a coarse filter for translocations by Harig and Fausch (2002).

B. Need for Action:

WCT are ranked as S2 (imperiled because of rarity or because of other factors demonstrably making it very vulnerable to extinction throughout its range) by the Natural Heritage Network and the State of Montana. Non-hybridized WCT are thought to occupy about 8% of their historical range in the western United States (Shepard et al. 2003) and less than 2% of their historical range within the Sun River Drainage (Moser 2007). The upper Sun River was likely historically fishless because of a major waterfall at Diversion Dam but is within the overall historic range of WCT. Major threats to WCT include: competition and hybridization with non-native rainbow trout (Leary et al. 1995; Hitt et al. 2003), competition with brook trout (Dunham et al. 2002; Peterson et al 2004), and isolation of remaining non-hybridized populations above barriers in short headwater sections of stream. These small isolated populations are at risk of extinction from catastrophic events (e.g. fire, drought) and may eventually suffer negative consequences of inbreeding (Wang et al. 2002). Translocations and transfers have been commonly used to augment established populations, re-establish historic populations, and in this case create a refuge population (Stockwell and Leberg 2002). Moreover, one of the restoration actions specifically referenced in the WCT Conservation Agreement (MFWP 2007) is translocation of non-hybridized populations into new habitats. In the event of a catastrophic loss of the N. Fk. Willow Creek population, Lange Creek WCT could be used to re-found the population, or vice-versa. Though populations will not be identical because of adaptations to the new environment in Lange Creek, replication should

preserve some of the rare allelic diversity that is common in individual populations of WCT (Allendorf and Leary 1988).

II. Impacts of the proposed action

Please review the attached checklist on pages 8 to 12. The impacts of this action are included in the Environmental Assessment checklist. The following text addresses the impacts.

A. Impacts to the Physical Environment

Fish and Wildlife – *Section 5c, d, i, of Checklist*

Live fish transfers have been used to successfully establish WCT cutthroat populations in the past (Tews et al. 2000, Moser 2007). This EA and a Wild Fish Transfer request were submitted to the Fish Health Committee in the spring of 2009. The MFWP wild fish transfer policy will be followed and WCT will not be transferred until approved by the MFWP Fish Health Committee. Several measures will be taken to reduce potential impacts to the aquatic habitat. These measures include: disease testing of fish in the donor and recipient streams where appropriate, amphibian surveys of the recipient stream, and invertebrate surveys of the recipient stream.

Disease testing: Disease samples (60 fish) were collected from N. Fk. Willow Cr. (donor stream) on 23 September 2008. Results were negative for all samples submitted (report date:19 November 2008).

Genetic Analyses: Alleles characteristic of only westslope cutthroat trout were detected at all loci using INDEL (insertion/deletion analysis, collected 10/26/2006, N=17) of fin clips from upper North Fork Willow Creek. A previous allozyme analysis (collected 8/9/90, N=22) of whole fish and two previous PINE analyses (collected 6/19/2000, N=10 and 7/3/2001, N=20) of fin clips also provided no evidence of hybridization. With the combined sample size of 69 there is a much better than 99 percent chance of detecting as little a one percent rainbow or Yellowstone cutthroat trout genetic contribution (Leary 2007).

Aquatic Invertebrates and Amphibians: Lange Creek currently supports a population of tailed frogs. Tailed frogs *(Ascaphus montanus)* commonly live in sympatry with salmonid species throughout their range, and are known to coexist with westslope cutthroat trout in North Badger Creek, Green Gulch, Limestone Creek, Lost Shirt Creek, Moudess Creek and other Rocky Mountain Front streams (USFS surveys). Moreover, tailed frogs have developed non-visual cues to the presence of aquatic predators, including cutthroat trout and brook trout. These cues allow tadpoles to hide from predators in crevices during daytime and come out at night to feed (Feminella and Hawkins 1994). There is little risk that the Lange Creek tailed frog population is rare or genetically distinct from other populations in Montana. Inland populations of tailed frogs have been shown to exhibit minimal genetic variation likely because of expansion during post glacial retreat followed by contemporary isolation (Nielson et al. 2001). Aquatic invertebrates were collected from above and below the barrier during early summer of 2007. Analysis indicated no rare taxa were present and most species are

commonly found in the presence of trout (Dan Gustafson *pers. comm.*). In addition, there were good numbers of a predatory stonefly associated with more successful trout transplants (Dan Gustafson *pers. comm.*).

B. Impacts to the Human Environment

Land Use – *Section 7a, 7c of Checklist*

The proposed project should have no impact on productivity or profitability of the area. There are no USFS grazing allotments in the area and the only private property (small mining claim, Figure 2) is downstream of the barrier near the confluence of Lange Creek and Gibson Reservoir. Any WCT moving downstream over the barrier will likely hybridize with rainbow trout. Once hybridized, these fish will not be considered part of this new population.

Lange Creek is a popular area for fall archery hunting. In addition, the area is used by outfitters during hunting season. To minimize impacts to the hunting public, transfers will occur prior to archery and rifle seasons.

Aesthetics/Recreation – *Section 11c of Checklist*

Fishless headwater reaches of streams are not rare, especially along the Rocky Mountain Front. Lange Creek does not harbor any rare species that might be impacted by the transfer. Moreover, approximately 1.5 miles of the uppermost headwaters will continue to be fishless because of a natural waterfall barrier (also see section 5). The new fishery will provide an opportunity to fish for native WCT in a remote pristine ecosystem, arguably a positive aesthetic and recreational change.

III. Discussion of Reasonable Alternatives

1) No Action:

Lange Creek will remain fishless. There is a small risk of an unauthorized transfer of fish by private individuals in the future. Instances of unauthorized transfers of fish into fishless waters have occurred throughout Montana. Creating a WCT fishery may prevent future transfers of non-native species. Under this alternative, N. Fk. Willow Creek WCT would not be replicated and their unique alleles would not be preserved.

2) Proposed Action:

Westslope cutthroat trout will be transferred from N. Fk. Willow Creek (Teton River Drainage) to Lange Creek (Sun Drainage). The total miles of stream inhabited by genetically unaltered WCT in the Sun Drainage will increase from 5 to 9 miles, an 80% increase. N. Fk. Willow Creek WCT will be replicated, reducing the risk of extirpation in the event of a catastrophic wildfire, disease, drought, or hybridization with non-native fishes.

IV. Environmental Assessment Conclusion Section

1) Is an EIS required? No, the action is expected to be minor and beneficial. An EA is the appropriate level of analysis.

References

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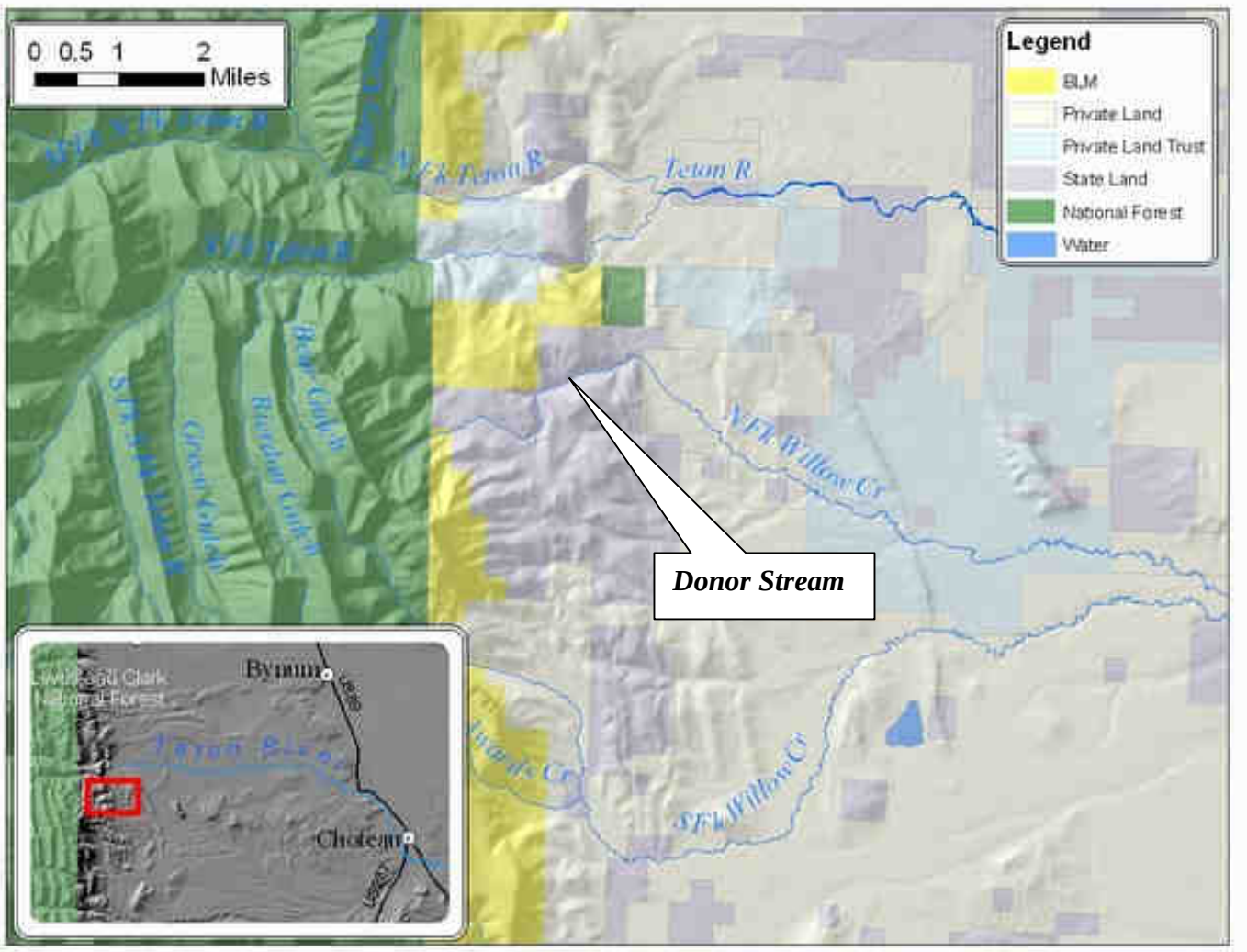

Figure 1. North Fork Willow Creek and vicinity.

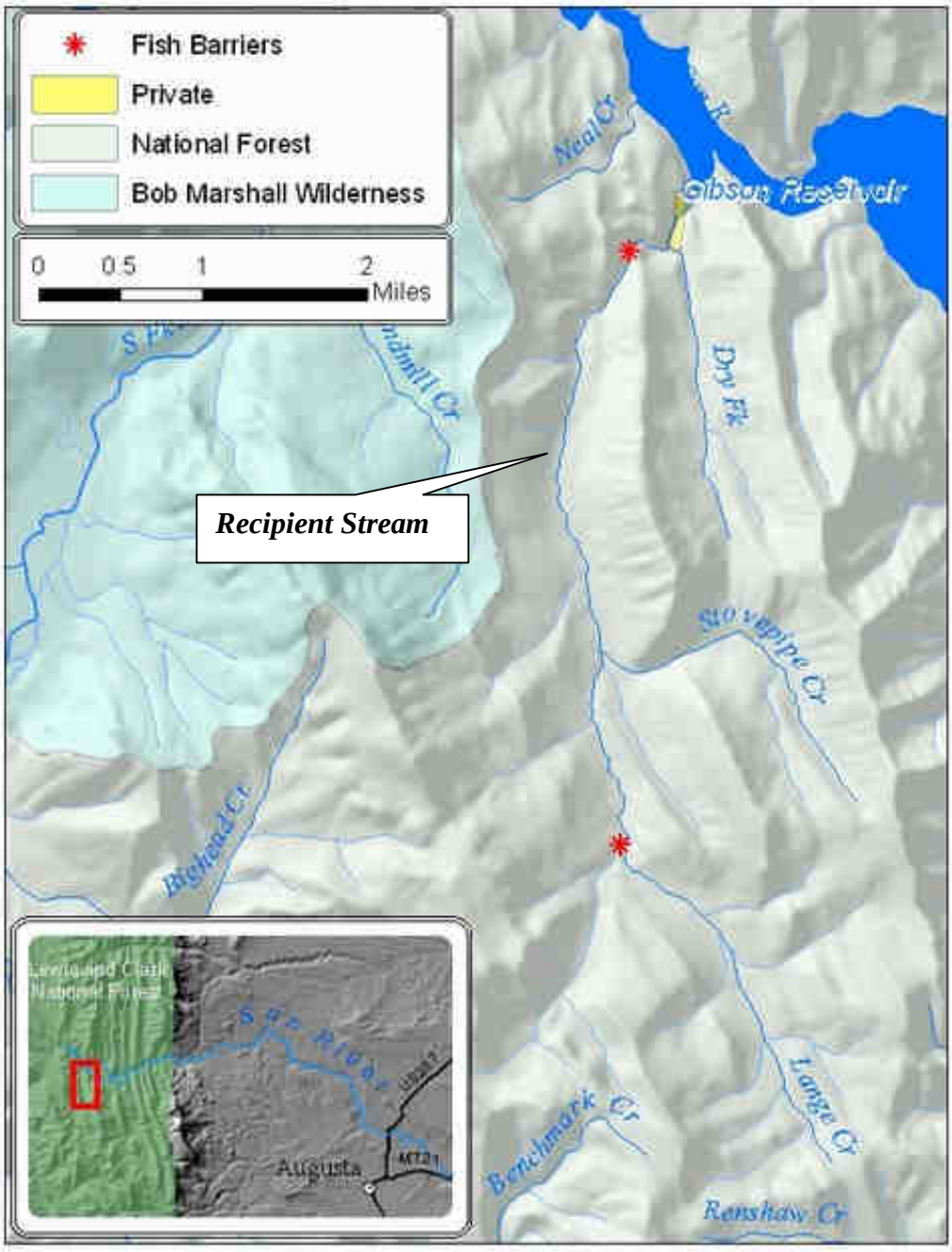

Figure 2. Lange Creek and vicinity.

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Environmental Assessment Checklist

Project: Transfer of live fish from N. Fk. Willow Creek (Teton River Drainage) To Lange Creek (Sun River Drainage) **Division:** Fisheries Division
Description of Project: 150 to 300 non-hybridized juvenile and/or adult westslope cutthroat trout will be transferred by helicopter from N. Fk. Willow Creek to Lange Creek. The project is expected to be completed in 1 to 3 years.

A. PHYSICAL ENVIRONMENT

1. LAND RESOURCES **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Soil instability or changes in geologic substructure?		X				
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce productivity or fertility?		X				
c. Destruction, covering or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?		X				
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				
2. WATER **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?		X				
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of floodwater or other flows?		X				
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?		X				

i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. Will the project affect a designated floodplain?		X				
m. Will the project result in any discharge that will affect federal or state water quality regulations? (Also see 2a)		X				
3. AIR **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Emission of air pollutants or deterioration of ambient air quality? (also see 13 (c))		X				
b. Creation of objectionable odors?		X				
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. Will the project result in any discharge, which will conflict with federal or state air quality regulations?		X				
4. VEGETATION **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?		X				
b. Alteration of a plant community?		X				
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?		X				
f. Will the project affect wetlands, or prime and unique farmland?		X				
5. FISH/WILDLIFE **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?		X				p. 3-4
c. Changes in the diversity or abundance of non-game species?			X			p. 3-4
d. Introduction of new species into an area?				X Beneficial		p. 2-4 Need for Action Section

e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?		X				
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?		X				
h. Will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f)		X				
i. Will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d)			X			p. 3-4

HUMAN ENVIRONMENT

6. NOISE/ELECTRICAL EFFECTS **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Increases in existing noise levels?		X				
b. Exposure of people to severe or nuisance noise levels?		X				
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				
7. LAND USE **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?			X			p. 4
b. Conflict with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?			X		X	p. 4
d. Adverse effects on or relocation of residences?		X				
8. RISK/HEALTH HAZARDS **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Risk of an explosion or release of hazardous substances (including, but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?		X				
b. Affect an existing emergency response or emergency evacuation plan or create a need for a new plan?		X				

c. Creation of any human health hazard or potential hazard?		X				
d. Will any chemical toxicants be used?		X				
9. COMMUNITY IMPACT **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				
10. PUBLIC SERVICES/TAXES/UTILITIES **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Will the proposed action have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify: _____		X				
b. Will the proposed action have an effect upon the local or state tax base and revenues?		X				
c. Will the proposed action result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Will the proposed action result in increased used of any energy source?		X				
e. Define projected revenue sources		X				
f. Define projected maintenance costs		X				
11. AESTHETICS/RECREATION **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		X				
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report)				X Benefit		p. 4

d. Will any designated or proposed wild or scenic rivers, trails or wilderness areas be impacted? (Also see 11a, 11c)		X				
12. CULTURAL/HISTORICAL RESOURCES **Will the proposed action result in:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Destruction or alteration of any site, structure or object of prehistoric historic or paleontological importance?		X				
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
d. Will the project affect historic or cultural resources?		X				
13. SUMMARY EVALUATION OF SIGNIFICANCE **Will the proposed action, considered as a whole:**	**IMPACT Unknown**	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources, which create a significant effect when considered together or in total.)		X				
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?		X				
f. Is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e)		X				
g. List any federal or state permits required.						

Other groups or agencies contacted or which may have overlapping jurisdiction: United States Forest Service.

List of Individuals or groups contributing to this EA: Dave Yerk, Fisheries Biologist, MFWP, Choteau, MT; Michael Enk, Fisheries Biologist, Lewis and Clark National Forest, Great Falls, MT.

List of all agencies and individuals who have been notified of this proposed transfer: Public notification via the MFWP Web Site (http://fwp.mt.gov/publicnotices). The USFS has been involved in drafting the EA.

Recommendation concerning preparation of EIS: No EIS Required. Action expected to be minor.

EA prepared by: David Moser, Fisheries Biologist, MFWP, Great Falls, MT. **Date:** January 14, 2009.

Comments will be accepted until: March 9, 2009.

Comments should be sent to: David Moser, MFWP, c/o USFS, P.O. Box 869, Great Falls, MT 59403; dmoser@mt.gov